

PES-0042

Claims:

1. (cancelled)

2. (currently amended) The electrochemical cell system of claim 11, wherein said parameter of said gas output is a pressure of said gas output.

3. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of a desired gas output pressure, said memory device is further configured to store a second operational parameter, said second operational parameter is indicative of a pressure variance limit relative to said desired gas output pressure; and

wherein said processor is adapted to provide an increase-signal to said energy source in response to said pressure of said gas output being less than said desired gas output pressure by an amount greater than said pressure variance limit.

4. (previously presented) The electrochemical cell system of claim 3, wherein said processor is adapted to provide a decrease-signal to said energy source in response to said pressure of said gas output exceeding said desired gas output pressure by an amount greater than said pressure variance limit.

5. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of an upper limit set point for gas output pressure, and said processor is adapted to provide a decrease-signal to said energy source in response to said pressure of said gas output exceeding said upper limit set point for gas output pressure.

6. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of a lower limit set point for gas output pressure, and said processor is adapted to provide an increase-signal to said energy source in response to said pressure of said gas output being less than said upper limit set point for gas output pressure.

PES-0042

7. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of an expected increase in gas output pressure over a period of time, said processor is adapted to monitor said output signal over said period of time to determine a change in said gas output pressure, and said processor is adapted to provide an interrupt signal to said energy source in response to said change in said gas output pressure being less than said expected increase.

8. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of an expected increase in gas output pressure over a period of time, said processor is adapted to monitor said output signal over said period of time to determine a change in said gas output pressure, and said processor is adapted to provide a signal to an alarm in response to said change in said gas output pressure being less than said expected increase.

9. (previously presented) The electrochemical cell system of claim 7 wherein said processor is adapted to determine said first operational parameter based on said quantity of energy to said electrochemical cell.

10. (previously presented) The electrochemical cell system of claim 9 wherein said processor is adapted to receive a signal indicative of said quantity of energy in response to feedback from said energy source.

PES-0042

11. (currently amended) An electrochemical cell system comprising:
an electrochemical cell;
an electrical energy source configured for providing a quantity of electrical energy to said
electrochemical cell;
a sensing apparatus in operable communication with a gas output from said
electrochemical cell, said sensing apparatus adapted to provide an output signal indicative of a
parameter of said gas output; and
a computer in operable communication with said sensing apparatus and said electrical
energy source, said computer including:
a memory device configured to store a first operational parameter, and
a processor configured to receive a digital representation of said output signal and said
first operational parameter, said processor configured to compares said digital representation of
said output signal to said first operational parameter, and to regulate said quantity of energy
provided to said electrochemical cell in response thereto;
The electrochemical cell system of claim 1, wherein said processor and a non-volatile
memory device are operably coupled to a remote computer, said remote computer is configured
to provide said first operational parameter to said non-volatile memory.

12. (currently amended) The electrochemical cell system of claim 11, wherein said
processor is adapted to determine said first operational parameter based on feedback from said
energy source.

13. (cancelled)

14. (currently amended) The method of claim-13_16, wherein said parameter is a
pressure of said gas output, and said predetermined value is indicative of a predetermined
pressure.

PES-0042

15. (currently amended) A method for controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined value and a predetermined variance from a memory device;
comparing said sensed signal to said predetermined value;

providing a signal to said electrical source in response to said sensed signal differing from said predetermined value by an amount greater than said predetermined variance;

adjusting an output of said electrical source in response to said signal to said electrical source; and The method of claim 13, further comprising:

providing said predetermined value and said predetermined variance to said memory device from a remote computer.

16. (currently amended) A method for controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined value and a predetermined variance from a memory device;
comparing said sensed signal to said predetermined value;

providing a signal to said electrical source in response to said sensed signal differing from said predetermined value by an amount greater than said predetermined variance;

adjusting an output of said electrical source in response to said signal to said electrical source; and The method of claim 13, further comprising:

adjusting at least one of said predetermined value and said predetermined variance based on feedback from said electrical source.

17 - 18. (cancelled)

PES-0042

19. (currently amended) The method of claim-18 21, wherein said parameter is a pressure of said gas output, said predetermined upper-value is indicative of an upper limit set point for gas output pressure, and said predetermined lower-value is indicative of a lower limit set point for gas output pressure.

20. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined upper-value from a memory device;

comparing said sensed signal to said predetermined upper-value;

providing a lower-signal to said electrical source in response to said sensed signal being greater than said predetermined upper-value;

lowering an output of said electrical source in response to said lower-signal;

retrieving a predetermined lower-value from a memory device;

comparing said sensed signal to said predetermined lower-value;

providing an increase-signal to said electrical source in response to said sensed signal being less than said predetermined lower-value;

increasing an output of said electrical source in response to said increase-signal; and The method of claim-18, further comprising:

providing said predetermined upper-value and said predetermined lower-value to said memory device from a remote computer.

PES-0042

21. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined upper-value from a memory device;

comparing said sensed signal to said predetermined upper-value;

providing a lower-signal to said electrical source in response to said sensed signal being greater than said predetermined upper-value;

lowering an output of said electrical source in response to said lower-signal;

retrieving a predetermined lower-value from a memory device;

comparing said sensed signal to said predetermined lower-value;

providing an increase-signal to said electrical source in response to said sensed signal being less than said predetermined lower-value; and

increasing an output of said electrical source in response to said increase-signal; and The method of claim 18, further comprising:

adjusting at least one of said predetermined upper-value and said predetermined lower-value based on feedback from said electrical source.

22. (cancelled)

23. (currently amended) The method of claim 22-27, further comprising:

interrupting an output of said electrical source in response to said signal.

24. (currently amended) The method of claim 27-22, further comprising:

activating an alarm in response to said signal.

25. (currently amended) The method of claim 27-22, wherein said parameter is a pressure of said gas output.

PES-0042

26. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined value from a memory device, said predetermined value indicative of an expected increase in said parameter over a period of time;

monitoring said sensed signal over said period of time to determine an increase in said parameter;

providing a signal to one or more of an alarm and said electrical source in response to said increase in said parameter being less than said expected increase in said parameter; and
The method of claim 22, further comprising:

providing said predetermined value to said memory device from a remote computer.

27. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined value from a memory device, said predetermined value indicative of an expected increase in said parameter over a period of time;

monitoring said sensed signal over said period of time to determine an increase in said parameter;

providing a signal to one or more of an alarm and said electrical source in response to said increase in said parameter being less than said expected increase in said parameter; and
The method of claim 22, further comprising:

adjusting said predetermined value based on feedback from said electrical source.

PES-0042

28. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed signal indicative of said parameter;

retrieving a predetermined value from a memory device, said predetermined value indicative of an expected increase in said parameter over a period of time;

monitoring said sensed signal over said period of time to determine an increase in said parameter;

providing a signal to one or more of an alarm and said electrical source in response to said increase in said parameter being less than said expected increase in said parameter; and
The method of claim 22, further comprising:

determining said predetermined value based on said quantity of energy to said electrochemical cell.

29-42. (canceled)

PES-0042

43. (currently amended) An electrochemical cell system comprising:
an electrolysis cell configured to receive electrical energy and to produce hydrogen gas;
an electrical energy source configured to provide a quantity of electrical energy to said
electrolysis cell;

a sensing apparatus in operable communication with a gas output from said electrolysis
cell, said sensing apparatus adapted to provide an output signal indicative of a pressure of said
gas output; and

a computer in operable communication with said sensing apparatus and said electrical
energy source, said computer including:

a memory device configured to store a first operational parameter, and
a processor configured to receive a digital representation of said output signal and said
first operational parameter, said processor configured to compare said digital representation of
said output signal to said first operational parameter, and to regulate said quantity of energy
provided to said electrolysis cell in response thereto;

wherein said processor and a non-volatile memory device are operably coupled to a
remote computer, said remote computer is configured to provide said first operational parameter
to said non-volatile memory.

44. (previously presented) The electrochemical cell system of claim 43, wherein:
said first operational parameter is indicative of an expected increase in gas output
pressure over a period of time, said processor is adapted to monitor said output signal over said
period of time to determine a change in said gas output pressure, and said processor is adapted to
provide an interrupt signal to said energy source in response to said change in said gas output
pressure being less than said expected increase.

45. (previously presented) The electrochemical cell system of claim 44 wherein said
processor is adapted to determine said first operational parameter based on said quantity of
energy to said electrochemical cell.

PES-0042

46. (previously presented) The electrochemical cell system of claim 45 wherein said processor is adapted to receive a signal indicative of said quantity of energy in response to feedback from said energy source.

47. (previously presented) The electrochemical cell system of Claim 4, wherein said electrochemical cell comprises an electrolysis cell.